WHAT IS CLAIMED IS:

1. A method for automated independent technical review, the method comprising:

receiving an assay result of a radioactive waste container;

generating a review template;

determining whether said assay result is within a predetermined parameter based on said generating said review template;

determining whether a review is required if said assay result is not within said predetermined parameter; and

rejecting said assay result if said review is not required and said assay result is not within said predetermined parameter.

2. The method of claim 1, wherein said assay result is a gamma radiation assay result.

3. The method of claim 1, further including generating a comment template if said review is required.

4. The method of claim 1, wherein said generating said review template includes:

generating an assay result data field including said assay result;

generating a requirements field including said predetermined parameter;

generating a review field including a first instruction based on said determining whether said review is required; and

generating a rejection field including a second instruction based on said determining whether said review is required.

5. The method of claim 1, further including:

determining the identity of a material in said radioactive waste container; and

determining whether said assay result is acceptable based on said identity of said material.

6. The method of claim 1, wherein said determining whether said assay result is within said predetermined parameter includes determining whether a relative error for a plutonium isotope is within said predetermined parameter.

7. The method of claim 6, wherein said determining whether a relative error for a plutonium isotope is within said predetermined parameter includes:

determining an absolute 3-sigma error for said plutonium isotope;

determining a range for the weight percent of said plutonium isotope based on said absolute 3-sigma error; and

determining that said assay result is not within said predetermined parameter if an accepted weapons grade weight percent is not within said range.

8. The method of claim 6, further including using a default isotopic if no measurement for said plutonium isotope is available.

9. The method of claim 6, wherein said determining whether said relative error for said plutonium isotope is within said predetermined parameter includes using a default isotopic parameter if said relative error is greater than about 70 percent.

10. The method of claim 9, wherein said relative error is based on a plutonium isotope for Pu^{240}.

11. The method of claim 1, wherein said determining whether said assay result is within said predetermined parameter includes determining whether the density of said radioactive waste container is within said predetermined parameter.

12. The method of claim 11, wherein said determining whether said density of said radioactive waste container is within said predetermined parameter includes determining that said assay result is not within said predetermined parameter if said density is greater than about 2.5 grams per cubic centimeter.

13. The method of claim 1, wherein said determining whether said assay result is within said predetermined parameter includes determining whether a radioactive material in said radioactive waste container is lumped.

14. The method of claim 13, wherein said determining whether said radioactive material in said radioactive waste container is lumped includes comparing the ratio of two gamma energies.

15. The method of claim 14, wherein said comparing the ratio of said two gamma energies includes:

determining the ratio of a 413.71 keV gamma energy to a 129.294 keV gamma energy;

determining that said assay result is not within said predetermined parameter if said ratio is greater than about 2.5.

16. The method of claim 1, wherein said determining whether said assay result is within said predetermined parameter includes comparing a total plutonium mass result to a qualification mass value.

17. The method of claim 16, wherein said comparing includes:

comparing said total plutonium mass result to a low qualification mass value;

determining that said assay result is not within said predetermined parameter if said total plutonium mass result is less than said low qualification mass;

comparing said total plutonium mass result to a high qualification mass value; and

determining that said assay result is not within said predetermined parameter if said total plutonium mass result is greater than said high qualification mass value.

18. The method of claim 1, wherein said determining whether said assay result is within said predetermined parameter includes determining that said assay result is not within said predetermined parameter if a total plutonium weight percent is greater than about 10 percent.

19. The method of claim 1, wherein said determining whether said assay result is within said predetermined parameter includes determining that said assay result is not within said predetermined parameter if a criticality safety value is greater than about 220 grams.

20. The method of claim 1, wherein said determining whether said assay result is within said predetermined parameter includes determining that said assay result is not within said predetermined parameter if a fissile gram equivalent at 2 sigma is greater than about 220 grams.

21. The method of claim 1, wherein said determining whether said assay result is within said predetermined parameter includes using a nuclide total result to compare a mass ratio of a first isotope and a second isotope.

22. The method of claim 21 wherein said first isotope is Pu^{239} and said second isotope is Am^{241}.

23. The method of claim 22 wherein said using a nuclide total result to compare said mass ratio of a first isotope and a second isotope includes determining that said assay result is not within said predetermined parameter if said mass ratio is less than about 200.

24. The method of claim 21 wherein said first isotope is Pu^{239} and said second isotope is Np^{237}.

25. The method of claim 24 wherein said using a nuclide total result to compare said mass ratio of a first isotope and a second isotope includes determining that said assay result is not within said predetermined parameter if said mass ratio is less than about 125.

26. The method of claim 1, wherein said determining whether said assay result is within said predetermined parameter includes determining a nuclide totals result for an isotope.

27. The method of claim 26, wherein said isotope is Np^{237}.

28. The method of claim 27, wherein said determining said nuclide totals result is not performed for said isotope if the presence of said isotope is confirmed.

29. The method of claim 26, wherein said isotope is U^{235}.

30. The method of claim 29, wherein said determining said nuclide totals result is not performed for said isotope if the presence of said isotope is confirmed.

31. The method of claim 26, wherein said isotope is U^{233}.

32. The method of claim 26, wherein said isotope is U^{238}.

33. The method of claim 26, wherein said determining whether said assay result is within said predetermined parameter includes determining that said assay result is not within said predetermined parameter if a count rate corresponding to said isotope is greater than about 5 times an error value.

34. The method of claim 1, wherein said determining whether said assay result is within said predetermined parameter includes determining that said assay result is not within said predetermined parameter if a 400 keV transmission source peak intensity is less than about 1 percent of a calibrated intensity.

35. The method of claim 1, wherein said determining whether said assay result is within said predetermined parameter includes:

defining a segment of said radioactive waste container;

determining whether a transmission source peak for said segment of said radioactive waste container is a low transmission source peak having an energy of less than about 400 keV; and

determining that said assay result is within said predetermined parameter if said low transmission source peak is greater than about 0.1 percent of a calibrated intensity.

36. The method of claim 1, wherein said determining whether said assay result is within said predetermined parameter includes:

detecting the presence of a pulser peak;

determining that said assay result is not within said predetermined parameter if said pulser peak is not detected; and

determining that said assay result is not within said predetermined parameter if a total number of counts in said pulser peak is less than about 3,000 counts.

37. The method of claim 1, wherein said determining whether said assay result is within said predetermined parameter includes:

detecting the presence of a reference source peak;

determining that said assay result is not within said predetermined parameter if said reference source peak is not detected; and

determining that said assay result is not within said predetermined parameter if a total number of counts in said reference source peak is less than about 50 percent of a calibrated rate.

38. The method of claim 1, wherein said determining whether said assay result is within said predetermined parameter includes:

defining a segment of said radioactive waste container;

determining a live time result for said segment;

determining a real time result for said segment; and

determining that said assay result is not within said predetermined parameter if said live time result divided by said real time result is less than about 0.3.

39. The method of claim 1, wherein said determining whether said assay result is within said predetermined parameter includes:

defining a first segment and a second segment of said radioactive waste container;

detecting a first radioactivity level of said first segment;

detecting a second radioactivity level of said second segment;

detecting a total radioactivity level of said radioactive waste container; and

determining that said assay result is not within said predetermined parameter if said first radioactivity level and said second radioactivity level combined is greater than about 50 percent of said total radioactivity level.

40. The method of claim 39, wherein said first segment is at a bottom end of said radioactive waste container.

41. The method of claim 40, wherein said first segment is disposed against said second segment.

42. A method for automated independent technical review, the method comprising:

receiving an assay result of a radioactive waste container containing a radioactive material;

determining a relative error for a plutonium isotope based on said assay result;

determining whether said relative error is within a first predetermined parameter;

determining whether a first review is required if said relative error is not within said first predetermined parameter;

rejecting said assay result if said first review is not required and said relative error is not within said first predetermined parameter;

determining whether said radioactive material is lumped; and

determining whether a second review is required if said radioactive material is lumped.

43. A method for automated independent technical review, the method comprising:

receiving an assay result of a radioactive waste container containing a radioactive material;

determining a total plutonium weight percent based on said assay result;

rejecting said assay result if said total plutonium weight percent is greater than about 10 percent;

determining criticality safety value based on said assay result; and

rejecting said assay result if said criticality safety value is greater than about 220 grams.

44. A method for automated independent technical review, the method comprising:

receiving an assay result of a radioactive waste container containing a radioactive material;

determining that said assay result requires a review if the ratio of a Pu^{239} isotope and a Am^{241} isotope is compared by using a nuclide total result and said ratio is less than about 200;

determining that said assay result requires a review if the ratio of a Pu^{239} isotope and a Np^{237} isotope is compared by using a nuclide total result and said ratio is less than about 125; and

determining that said assay result requires a review if a count rate corresponding to an U^{233} isotope is greater than about 5 times an error value.

45. A method for automated independent technical review, the method comprising:

receiving an assay result of a radioactive waste container;

determining whether said assay result is within a predetermined parameter;

determining whether a review is required if said assay result is not within said predetermined parameter; and

rejecting said assay result if said review is not required and said assay result is not within said predetermined parameter.

46. A system for automated independent technical review, the system comprising:

a host system for receiving an assay result of a radioactive waste container, generating a review template, determining whether said assay result is within a predetermined parameter based on said generating said review template, determining whether a review is required if said assay result is not within said predetermined parameter and rejecting said assay result if said review is not required and said assay result is not within said predetermined parameter;

a network coupled to said host system; and

a database coupled to said host system for storing data relating to said automated independent technical review.

47. The system of claim 46, further including:

a user system coupled to said network; and

said user system accessing said host system via said network.

48. A system for automated independent technical review, the system comprising:

a host system for receiving an assay result of a radioactive waste container containing a radioactive material, determining a relative error for a plutonium isotope based on said assay result, determining whether said relative error is within a first predetermined parameter, determining whether a first review is required if said relative error is not within said first predetermined parameter, rejecting said assay result if said first review is not required and said relative error is not within said first predetermined parameter, determining whether said radioactive material is lumped and determining whether a second review is required if said radioactive material is lumped;

a network coupled to said host system; and

a database coupled to said host system for storing data relating to said automated independent technical review.

49. A system for automated independent technical review, the system comprising:

a host system for receiving an assay result of a radioactive waste container containing a radioactive material, determining a total plutonium weight percent based on said assay result, rejecting said assay result if said total plutonium weight percent is greater than about 10 percent, determining criticality safety value based on said assay result and rejecting said assay result if said criticality safety value is greater than about 220 grams;

a network coupled to said host system; and

a database coupled to said host system for storing data relating to said automated independent technical review.

50. A system for automated independent technical review, the system comprising:

a host system for receiving an assay result of a radioactive waste container containing a radioactive material, determining that said assay result requires a review if the ratio of a Pu^{239} isotope and a Am^{241} isotope is compared by using a nuclide total result and said ratio is less than about 200, determining that said assay result requires a review if the ratio of a Pu^{239} isotope and a Np^{237} isotope is compared by using a nuclide total result and said ratio is less than about 125 and determining that said assay result requires a review if a count rate corresponding to an U^{233} isotope is greater than about 5 times an error value;

a network coupled to said host system; and

a database coupled to said host system for storing data relating to said automated independent technical review.

51. A system for automated independent technical review, the system comprising:

a host system for receiving an assay result of a radioactive waste container, determining whether said assay result is within a predetermined parameter, determining whether a review is required if said assay result is not within said predetermined parameter and rejecting said assay result if said review is not required and said assay result is not within said predetermined parameter;

a network coupled to said host system; and

a database coupled to said host system for storing data relating to said automated independent technical review.

52. A storage medium encoded with machine-readable computer program code for automated independent technical review, the storage medium including instructions for causing a processor to implement a method comprising:

receiving an assay result of a radioactive waste container;

generating a review template;

determining whether said assay result is within a predetermined parameter based on said generating said review template;

determining whether a review is required if said assay result is not within said predetermined parameter; and

rejecting said assay result if said review is not required and said assay result is not within said predetermined parameter.

53. A storage medium encoded with machine-readable computer program code for automated independent technical review, the storage medium including instructions for causing a processor to implement a method comprising:

receiving an assay result of a radioactive waste container containing a radioactive material;

determining a relative error for a plutonium isotope based on said assay result;

determining whether said relative error is within a first predetermined parameter;

determining whether a first review is required if said relative error is not within said first predetermined parameter;

rejecting said assay result if said first review is not required and said relative error is not within said first predetermined parameter;

determining whether said radioactive material is lumped; and

determining whether a second review is required if said radioactive material is lumped.

54. A storage medium encoded with machine-readable computer program code for automated independent technical review, the storage medium including instructions for causing a processor to implement a method comprising:

receiving an assay result of a radioactive waste container containing a radioactive material;

determining a total plutonium weight percent based on said assay result;

rejecting said assay result if said total plutonium weight percent is greater than about 10 percent;

determining criticality safety value based on said assay result; and

rejecting said assay result if said criticality safety value is greater than about 220 grams.

55. A storage medium encoded with machine-readable computer program code for automated independent technical review, the storage medium including instructions for causing a processor to implement a method comprising:

receiving an assay result of a radioactive waste container containing a radioactive material;

determining that said assay result requires a review if the ratio of a Pu^{239} isotope and a Am^{241} isotope is compared by using a nuclide total result and said ratio is less than about 200;

determining that said assay result requires a review if the ratio of a Pu^{239} isotope and a Np^{237} isotope is compared by using a nuclide total result and said ratio is less than about 125; and

determining that said assay result requires a review if a count rate corresponding to an U^{233} isotope is greater than about 5 times an error value.

56. A storage medium encoded with machine-readable computer program code for automated independent technical review, the storage medium including instructions for causing a processor to implement a method comprising:

receiving an assay result of a radioactive waste container;

determining whether said assay result is within a predetermined parameter;

determining whether a review is required if said assay result is not within said predetermined parameter; and

rejecting said assay result if said review is not required and said assay result is not within said predetermined parameter.

57. A computer data signal for automated independent technical review, the computer data signal comprising code configured to cause a processor to implement a method comprising:

receiving an assay result of a radioactive waste container;

generating a review template;

determining whether said assay result is within a predetermined parameter based on said generating said review template;

determining whether a review is required if said assay result is not within said predetermined parameter; and

rejecting said assay result if said review is not required and said assay result is not within said predetermined parameter.

58. A computer data signal for automated independent technical review, the computer data signal comprising code configured to cause a processor to implement a method comprising:

receiving an assay result of a radioactive waste container containing a radioactive material;

determining a relative error for a plutonium isotope based on said assay result;

determining whether said relative error is within a first predetermined parameter;

determining whether a first review is required if said relative error is not within said first predetermined parameter;

rejecting said assay result if said first review is not required and said relative error is not within said first predetermined parameter;

determining whether said radioactive material is lumped; and

determining whether a second review is required if said radioactive material is lumped.

59. A computer data signal for automated independent technical review, the computer data signal comprising code configured to cause a processor to implement a method comprising:

receiving an assay result of a radioactive waste container containing a radioactive material;

determining a total plutonium weight percent based on said assay result;

rejecting said assay result if said total plutonium weight percent is greater than about 10 percent;

determining criticality safety value based on said assay result; and

rejecting said assay result if said criticality safety value is greater than about 220 grams.

60. A computer data signal for automated independent technical review, the computer data signal comprising code configured to cause a processor to implement a method comprising:

receiving an assay result of a radioactive waste container containing a radioactive material;

determining that said assay result requires a review if the ratio of a Pu^{239} isotope and a Am^{241} isotope is compared by using a nuclide total result and said ratio is less than about 200;

determining that said assay result requires a review if the ratio of a Pu^{239} isotope and a Np^{237} isotope is compared by using a nuclide total result and said ratio is less than about 125; and

determining that said assay result requires a review if a count rate corresponding to an U^{233} isotope is greater than about 5 times an error value.

61. A computer data signal for automated independent technical review, the computer data signal comprising code configured to cause a processor to implement a method comprising:

receiving an assay result of a radioactive waste container;

determining whether said assay result is within a predetermined parameter;

determining whether a review is required if said assay result is not within said predetermined parameter; and

rejecting said assay result if said review is not required and said assay result is not within said predetermined parameter.